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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/092,212
Filing Date: March 06, 2002
Appellant(s): WAMPRECHT ET AL.

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GROUP 1700

Jennifer Seng
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 3/6/06 appealing from the Office action mailed 9/6/05.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal:

US Pat. Application Serial No. 10/092077 is subject to appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

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6,642,302

WAMPRECHT et al.

11-2003

US Pat. Application Serial No. 10/092077 to Wamprecht et al. filed 3/6/02.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A. Claims 1-6 and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Pat. No. 4079028 Emmons et al..

Emmons discloses a polyurethane thickener which is the reaction product of diisocyanate, polyether polyol having 3 or more OH groups, monoalcohol and monoamine. Upon reaction with the diisocyanate, the polyetherpolyol will have 4 or more OH groups where it began with 3 OH groups and will possess urethane groups in an intermediate product which will necessarily occur as predicted by statistics involved in such reactions of large numbers of molecules, as would be readily understood by the ordinary skilled artisan as such chemical statistics are taught in undergraduate school. It is emphasized that this relates to the intermediate in which one molecule of diisocyanate has reacted to connect two molecules of polyol. It is understood that the reaction will proceed further to give the final polyurethane, which may or may not have any free OH groups. Since the instant claims are directed to the final polyurethane per se and the method of making it, it is enough that the final product have moieties which could be attributed to the instantly claimed components of component A and that such intermediates form. The appellant provides no probative evidence that such intermediates do not form. The PTO has no facilities to make such determinations and it is axiomatic that the onus is on the appellant to provide such evidence. The polyurethane need not be made from the reactants of the instant claims because the instant claims are directed to the polyurethane final product and the method of making it. It is not possible to distinguish the polyurethane of the instant claims and the polyurethane of the prior art based on the ingredients which initially formed the polyurethane segment. In other words, making the polyurethane thickener from only the instantly claimed

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polyether a1 will necessarily give moieties falling within the scope of both a1 and a2 upon reaction of 2 or more molecules of polyether polyol with diisocyanate. Such intermediate reaction will necessarily occur statistically and gives the components of the instant method claims. It is also expected that the patentee's reaction of diisocyanate with the polyether polyol will give a mixture falling within the scope of the instant claim 8, step A, at least as an intermediate of the reaction of Emmons. This again is expected from statistical analysis of the reaction occurring in Emmons. Emmons discloses the combination of monols and amines at column 9, lines 46-68 and column 10, lines 1-19. The degree of picking and choosing required to arrive at the instantly claimed invention is sufficient to remove this reference from the scope of an anticipating reference under the relevant caselaw, such as but not limited to *In re Baird*. See column 2, lines 59-68; column 3, lines 1-68, particularly 31-61; column 4, lines 1-5; column 6, lines 1-68; column 8, lines 1-23 and 48-68; column 9, lines 46-68; and the remainder of the document, particularly the examples. It would have been obvious to one of ordinary skill in the art at the time of the instant invention to use the instantly claimed combination of ingredients to form the thickener of the patentee because the patentee clearly encompasses such mixtures of reactants and the instantly claimed combination of ingredients would have been expected to give the thickening properties discussed by the patentee.

The smaller amount of picking and choosing in the prior art is deemed by the examiner to lead to the choice of the instantly claimed reactant combinations discussed above. Thus, the motivation to combine the reactants taught by one single reference to be useful together and selected from a rather small pool of reactants is deemed to make the instant claims obvious over the cited prior art for the reasons stated above. The appellant's arguments in this regard are therefore not persuasive. It is not seen that the polyurethane thickeners would not necessarily have a softening temperature falling within the scope of that of the instant claims and the instantly claimed softening temperature is typically expected of such polyether based

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polyurethane thickeners of the molecular weights encompassed by the patentee. It is noted that the method of measuring the instantly claimed softening point is not specified and such methods of measuring polymer softening points lead to different values. There is no probative evidence that the instantly claimed reactants do not give the polyurethane argued above nor that they give any unexpected results. The instantly claimed softening temperature is not seen as giving any unexpected results.

Appellant's argument "On the other hand, in the present invention a slight excess of isocyanate is always used, which is eliminated at the end of the preparation (see the examples in the specification). is not persuasive since the instant claims do not require elimination of the excess NCO at the end of the preparation and the instant claims encompass the use of a vast excess of OH to NCO at the start, presumably of the reaction, at 0.5:1 NCO:OH, which contradicts the appellant's arguments regarding an excess of NCO always being required, as well as the stoichiometric amount of NCO:OH, i.e. 1:1 NCO:OH of the prior art. This argument is therefore not born out by the appellant's own claims and does not distinguish the product of the instant claims over that of the patentee. Column 8, lines 61-62 is isophorone diisocyanate which contradicts the appellant's arguments that Emmons does not disclose IPDI. This list of isocyanates is not so large that the ordinary skilled artisan would not readily use this most popular of diisocyanates in the reaction product of the patentee. The appellant's argument re isophorone diisocyanate is therefore not persuasive. This list of isocyanates is not "every possible moiety". It is a few well known very often used urethane forming monomers. No unexpected results are seen in a manner commensurate in scope with the instant claims and the cited prior art stemming from the use of isophorone diisocyanate, including the alleged positive rheological properties argued by the appellant's representative. The instantly claimed polyurethane is not seen to be distinct from that of the prior art based on the use of the reactants of the instantly claimed component A.

Appellants request authority for the assertion that Emmons' polyurethane discussed above necessarily contains moieties having the instantly claimed combinations of polyols of the instantly claimed component A. The appellant's representative is noticed that the instant claims are directed to the polyurethane per se. The polyurethane of Emmons may have a molecular weight of up to 200000 per column 2, lines 56-58. This polyurethane will contain several units of the patentee's polyether polyols which must have "at least 3 OH groups" which are connected by diisocyanates. The appellant's representative is to consider the reaction product of one molecule of diisocyanate with two molecules of polyether polyol having at least three OH groups. The final reaction product will be a polyol having 4 OH groups and 2 urethane groups. This moiety will be present in the polyurethane of Emmons several times and falls within the scope of the instantly claimed component a2) clearly. The other polyether polyols of Emmons having at least 3 OH groups will also be present repeatedly in the polyurethane of Emmons of higher molecular weights and clearly falls within the scope of the instantly claimed component a1). This was clearly described above. Since the polyurethane final product is claimed in the instant claims, not the process of making it, and the polyurethane of Emmons has the moities required by the instantly claimed component A, as clearly described above and more clearly described now, Emmons' polyurethane falls within the scope of the polyurethanes of the instant claims regarding the instantly claimed component A. This should be readily clear to the appellant's representative based on the rudiments of polyurethane reactions of polyols and polyisocyanates and should require no further authority as it is clear on its face. The examiner also notes that at least 3 OH groups encompasses 4 OH groups and such compounds reacted with the diisocyanate of Emmons will have 6 OH groups in the moiety present in the polyurethane of Emmons by the thought experiment described above.

The appellant's argument that "Surely the reaction of two or more isocyanate groups in the polyisocyanates used in Marz or Emmons can react with two or more hydroxyl groups on the

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same polyol. This is true. But the instant claims are to a polyurethane and the polyurethane of Emmons or Marz will necessarily contain the moieties implied by the components of the instantly claimed component A, as clearly illustrated above. The examiner does not have to illustrate that any pathway is more favorable than another in making the final polyurethane because the instant claims do not have enough limitations to imply a final product by which any particular pathway is favored and the polyurethane of Emmons or Marz will clearly have the moieties implied by the instantly claimed component A. The appellant can draw out all of the possible polyurethanes which can result from the high molecular weight polyurethane of Emmons using the ingredients of Emmons and will see that he can in fact excise the moieties which would have resulted from the instantly claimed component A.

The appellant questions whether the instantly claimed obviousness rationale is in Emmons and requests that the examiner cite another reference to support his position on Emmons. No other reference is needed. The motivation and teachings requisite for obviousness are clearly in Emmons on its face, more so now that the appellant's representative is expected to more clearly see how the polyurethane of Emmons will necessarily contain the moieties implied by the instantly claimed component A. No affidavit is required for the above reasons also. This rejection is therefore maintained.

The appellant's arguments that Emmons does not disclose IPDI is not persuasive for the reasons stated above, particularly note column 8, lines 61-62 which is IPDI. The Sauer declaration is not commensurate in scope with the instant claims and the cited prior art and is therefore not persuasive. The instant claims and the cited prior art do not require the IPDA. It is noted that the declared properties are a function of numerous parameters of the recited reactants, such as HLB, viscosity average molecular weight, identity of associative moieties and amounts thereof, etc. It is not seen that the declarant's examples consider all of the potential differences in these parameters which may be responsible for the declared results. Since the claims

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encompass broad values of these parameters, as does the patentee, the declarant's examples are not commensurate in scope with the patentee's disclosure and the instant claims.

The appellant continues to state that IPDI is not taught. The appellant's representative is again referred to column 8, lines 61-62 which is IPDI. The argued standards of a prima facie case of obviousness have been well met above. No probative evidence to the contrary is seen. It is not seen that the newly recited limitations regarding component A are not inherent in the above argued polyurethane. The instant claims containing the newly presented limitation regarding the production of component A are directed to the polyurethane per se, not its method of production. It is not seen that the above discussed polyurethane of the patentee does not necessarily and inherently possess the moieties implied by the new product by process of making component A. Such moieties would be expected in the above discussed polyurethane necessarily purely from statistical considerations of the reactions of 10^{23} molecules. No probative evidence is seen to the contrary that the polyurethane of the patentee discussed above does not fall within the scope of that of the instant claims. The argument that a different process is disclosed in Emmons than in the instant claims is not relevant regarding the instant polyurethane claims and composition claims since the polyurethane of Emmons would appear to be that of the instant claims where IPDI of column 8, lines 61-62 is used. Regarding the instant process claims, it is not seen that the reaction of Emmons discussed above does not meet the instant method claims. The expectation of success in Emmons is that they make polyurethanes. It is not seen where this leads to an absence of expectation of success. It is not even seen where the instant invention establishes any "success" nor, more importantly to patentability considerations, any unexpected results over that of Emmons in a manner commensurate in scope with the instant claims and the cited prior art.

This rejection is maintained for these reasons and the reasons cited above.

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B. Claims 1-6 and 8-12 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable claims 1-12 of copending application serial number 10/092077. Although the conflicting claims are not identical, they are not patentably distinct from each other because, although the claims differ somewhat in scope, they overlap such that it would have been obvious to the ordinary skilled artisan at the time of the instant invention to perform the instantly claimed invention from the claims of the copending application because most of the copending claims' invention is that of the instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. Appellant's disagreement with this rejection is noted but the appellant does not specify any deficiencies in this rejection. It is therefore maintained. No arguments have been applied to this rejection. There is no process for holding this rejection in abeyance and it is maintained for the above reasons.

C. Claims 1-6 and 8-12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-12 of U.S. Patent No. 6642302 Wamprecht et al. which is the issued patent of the application of the former provisional rejection over USSN 10/091960. Although the conflicting claims are not identical, they are not patentably distinct from each other because, although the claims differ somewhat in scope, they overlap such that it would have been obvious to the ordinary skilled artisan at the time of the instant invention to perform the instantly claimed invention from the claims of the copending application because most of the copending claims' invention is that of the instant claims.

(10) Response to Argument

A. In regard to the Emmons rejection of paragraph 9A. above:

The appellant is incorrect in that "Emmons fails to teach or suggest the additional step in the production of polyurethanes of creating a polyether alcohol mixture of polyether polyols

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with an average functionality of ≥ 3 and polyether polyols with an average functionality of ≥ 4 by a partial reaction of up to 50 mole % of polyether polyols with an average functionality of ≥ 3 with isocyanates with an average functionality of ≥ 2 as recited in independent claim 1.” but not claim 10. Specifically, it is noted that Emmons discloses reacting polyether triol and diisocyanate at column 2, lines 59-68; column 3, lines 1-68, particularly 1-30, 31-68, which encompasses the instantly claimed reactants including diisocyanates and polyether polyols having 3 or more OH groups; column 8, lines 1-23, which encompasses the instantly claimed polyether polyols having 3 or more OH groups, and lines 48-68 which discloses reacting the polyether polyols with diisocyanates including isophorone diisocyanate (column 8, lines 61-62). It is noted that the isocyanate/alcohol reaction does not occur instantly. It requires some time. During this time, some molecules of triol will react with diisocyanate to give a tetraol having two urethane groups for example and then with more time will further build up molecular weight until all reactivity is complete. Formation of only one molecule of two polyether triols joined by a diisocyanate to give a tetraol containing two urethane groups fulfills the instantly claimed component A as well as reacts “up to 50 mole % of the polyether triols with diisocyanate because “up to” is inclusive down to one molecule in these claims. The appellant provides no probative evidence to the contrary. Page 6 of the appellant’s brief, last 7 lines is taken as an admission that the above argued moieties in fact form. This reaction meets the process limitations of the instant claim 10 and its dependent claims which do not recite the “up to 50 mole %” limitation of claim 1. The reaction will proceed past the formation of the putative tetraol discussed above to give the final polyurethane. The instant claims recite no order of addition, no amounts, no degree of polymerization nor any other parameters which distinguish

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the reaction of the patentee from that of the instant method claims. For similar reasons, the product by process of the instant claim 1 and its dependent claims is not different than that of the patentee discussed above.

The instant claim 1 and its dependent claims are ultimately directed to the polyurethane per se. The instantly claimed reaction does not distinguish over the reaction which occurs in Emmons for the reasons stated above. Furthermore, the instant product claims will contain the above discussed polyether triol moieties joined by diisocyanate moieties throughout the molecules of polyurethane as dictated by the reactions which may occur in the reaction mixtures discussed in the above rejection where diisocyanate and triol are used with the other disclosed reactants. Where two triols are joined by diisocyanate, a tetraol moiety containing urethane groups is formed. These are the moieties that the instantly claimed component a2) will contribute to the polyurethane.

The appellant is correct in asserting that the examiner is stating that the reaction of diisocyanates with polyether triols is equivalent to preparing a mixture according to the instant claims 1 and 10 component or step A for the reasons discussed above. The appellant provides no probative evidence to the contrary.

The appellant argues "Clearly, a polyether polyol of single functionality is not equivalent to a mixture of polyether polyol with average functionality of ≥ 3 and ≥ 4 as recited in component A) of independent claim 1." This is true. However, this is not what the examiner has argued.

The examiner has argued that the reaction product of a mixture of polyether triol and diisocyanate according to Emmons will make one or more molecules of polyether tetraol having

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two urethane groups, which is a2 of the instant claims and the unreacted polyether triol is a1 of the instant claims. Since the reaction of the triol and diisocyanate of Emmons is not instantaneous and the instant claims do not recite sufficient limitations to distinguish over this reaction scheme of Emmons, the process of Emmons is that of the instant claim 10 and the product resulting therefrom is that of the instant claim 1 where polyether triol, diisocyanate, and the other reactants B through E of Emmons and the instant claims are used. There is not probative evidence to the contrary. In other words, the instantly claimed process steps do not distinguish over Emmons where the instantly claimed triols, diisocyanates, and other reactants are used because the reaction of Emmons necessarily makes the instantly claimed component a2 in the claimed amount at some point in time of the reaction of Emmons. Again, no probative evidence to the contrary is seen. Thus, the moieties required of the instant claims would be in the final polyurethane of Emmons where triol, diisocyanate, and the other ingredients B through E of the instant claims are used to make the polyurethane of Emmons.

The appellant argues that the object is to make ≤ 50 mole% of the instantly claimed polyether polyols having ≥ 4 OH groups. This is actually not claimed nor would it be the necessary result of the claim limitations which allow for up to 50 mole % of the polyethers a1 to be reacted with isocyanates of functionality ≥ 2 . Thus, two moles of a1 would give 1 or fewer moles of a2 at the maximum allowed reaction of a1 depending on the amounts of polyisocyanate and polyol and their functionalities and the reaction scheme used.

In the spirit of the intended argument, the initial reaction of the components of Emmons prior to completion of the entire reaction will necessarily give some triol and some tetraol according to the instant claims prior to completion of the reaction as admitted at page 6 of the

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appellant's brief. Claim 1 is ultimately directed to the polyurethane per se, not component A. The polyurethane of Emmons will have the moieties of the instantly claimed component A after the diisocyanate reacts with the polyether triols of Emmons discussed above. The ultimate product of claim 1 allows for completion of the reaction (i.e. A can further react with C), at which time the moieties coming from A and those resulting from a1 reacting with C are indistinguishable where C is the same as the polyisocyanate of A. Thus, the instant claims do not distinguish over Emmons.

The appellant is correct in their statement that "While statistically there may be a number of polyether polyols that are joined to form polyether polyols with functionality of ≥ 4 in a reaction containing polyether polyol and polyisocyanates..." at page 6 of their brief. This supports the examiner's arguments above. The instant claims only require a fraction of polyether polyols with a functionality of ≥ 4 OH groups to be produced, specifically the fraction resulting from reacting "up to 50 mole % of the polyethers a1" with polyisocyanate, though this limitation is not present in claim 10.

The examiner has not stated that "any mixture" meets the claims. See above. Regarding the product claims, the mixture of polyols having 3 or more OH groups of Emmons and the diisocyanates of Emmons will give a polyurethane having the moieties of the instantly claimed component a1 and a2 for the reasons stated above and the appellants statement at page 6 of their brief bolded above. a1 will be consumed by C and thus can give more a2 moieties. For the reasons stated above, this argument of the appellant does not overcome the rejection based on Emmons.

The appellant argues that “Emmons provides no teaching or suggestion that would make it obvious to one of ordinary skill in the art to prepare a mixture of polyether polyols recited in component A of independent claim 1 to produce a polyurethane thickener with improved high shear viscosity.” The appellant’s statement at page 6 bolded above and the examiner’s accompanying arguments make it very clear that the reaction product of Emmons, which is called a thickener, that contains the instantly claimed triol, diisocyanate, and other reactants B through E will be the same polyurethane as that of the instant claims 1 and 10 though the intermediate formation of the polyether tetraol containing urethane groups (e.g. the instantly claimed component a2) is not discussed by Emmons though the formation of this intermediate is acknowledged by the appellant at page 6 of their brief as bolded above. The alleged improvements in high shear viscosity have not been demonstrated by the appellant in a manner commensurate in scope with the instant claims and the cited prior art. They are expected to be a function of the type of polyether used, its molecular weight, the amount of monofunctional components used, the HLB of the final polyurethane, etc. However, where the instantly claimed triol of a1 and diisocyanate are used in Emmons, which clearly encompasses these components as stated above, the intermediate a2 of the instant claims 1 and 10 is expected to form, including in the amount of the instant claim 1.

The fact that the reaction of components of Emmons takes time means that initially a few molecules of tetraol and triol are present and subsequently the rest of Emmon’s mixture discussed above reacts meets the method limitations of the instant claim 10 which recites no order of addition of ingredients, no times of each of the steps, no separators for the claimed steps,

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and does not exclude the incremental reaction of diisocyanate and triol from being A of claim 10.

Therefore, the method of Emmons reads on that of the instant claim 10.

For reasons stated above regarding Emmon's use of the instantly claimed polyurethane reactants, the Appellant's arguments of page 6, the fact that the polyurethane of the patentee encompasses those of the instant claims and the methods overlap, and because the polyurethane of Emmons has a similar use and therefore requires similar properties, it is expected that the polyurethane of the patentee's claims will have a softening point falling within the instantly claimed broad range.

The requirements of a prima facie case of obviousness are clearly met above. This rejection should be maintained clearly.

B. In regard to the above rejection of claims 1-12 as being provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of copending Application No. 10/092212:

The appellant argues that allowable subject matter has not been indicated and therefore action on this rejection is premature on their part. There is no argument regarding the merits of this rejection and it should be maintained.

C. Claims 1-12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-12 of US Pat. No. 6642302 Wamprecht et al. formerly provisionally rejected over USSN 10/091960:

The appellant argues that allowable subject matter has not been indicated and therefore action on this rejection is premature on their part. There is no argument regarding the merits of this rejection and it should be maintained.

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(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,



Patrick Niland

Primary Examiner

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Conferees:

Vasu Jagannathan, SPE



James Seidleck, SPE

